

WE CLAIM:

*sub a)*

1. A method for generating a hepatic cell culture comprising co-  
2 culturing hepatocytes and nonparenchymal cells, in the presence of growth factors and a  
3 matrix coated with at least one biologically active molecule that promotes cell adhesion,  
4 proliferation or survival under conditions sufficient to allow for the proliferation of  
5 hepatocytes that retain hepatic function.

*sub b)*

1. 2. The method of claim 1 wherein the hepatocytes and  
2 nonparenchymal cells are derived from a liver tissue sample.

1. 3. The method of claim 1 wherein the matrix is in the form of  
2 polystyrene beads.

1. 4. The method of claim 1 wherein the matrix is coated with an  
2 extracellular matrix protein.

1. 5. The method of claim 1 wherein the matrix is coated with type I  
2 collagen.

1. 6. The method of claim 1 wherein the growth factor is epidermal  
2 growth factor.

1                   8.     A method for generating a three-dimensional hepatic cell culture  
2                   system comprising:

3 contacting a three-dimensional support matrix with a  
4 hepatic cell culture comprising hepatocytes and  
5 nonparenchymal cells bound to a matrix coated with at least  
6 one biologically active molecule that promotes cell  
7 adhesion, proliferation or survival;  
8 under conditions sufficient to allow for the proliferation of the  
9 hepatic cell culture to form a three-dimensional hepatic cell  
10 structure.

1 10. The method of claim 8 wherein the matrix is in the form of a  
2 biomatrix gel.

1                   11. The method of claim 8 wherein the matrix is coated with an  
2                   extracellular matrix protein.

1                   12. The method of claim 1 wherein the matrix is coated with type I  
2                   collagen.

1                   13. The method of claim 8 wherein the matrix further comprises  
2                   growth factors incorporated into said matrix.

*lab A21*  
1                   14. A population of matrix/hepatic cell clusters comprising  
2                   hepatocytes and nonparenchymal cells associated with a matrix coated with at least one  
3                   biologically active molecule that promotes cell adhesion, proliferation or survival.

1                   15. A composition comprising matrix/hepatic cell clusters grown on a  
2                   three-dimensional support matrix wherein said matrix hepatic cell clusters comprising  
3                   hepatocytes and nonparenchymal cells bound to a matrix coated with at least one  
4                   biologically active molecule that promotes cell adhesion, proliferation or survival.

1                   16. A three-dimensional tissue culture matrix prepared by a process  
2                   comprising:  
3                   contacting a three-dimensional support matrix with a  
4                   hepatic cell culture comprising hepatocytes and

5 nonparenchymal cells bound to a matrix coated with at least  
6 one biologically active molecule that promotes cell  
7 adhesion, proliferation or survival;  
8 under conditions sufficient to allow for the proliferation of the  
9 hepatic cell culture.

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19. The method of claim 18 wherein the liver disorder is hepatitis.

*add B1*

*add C1*

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